

**SENATE  
WATER AND POWER SUBCOMMITTEE  
ENERGY AND NATURAL RESOURCES COMMITTEE  
FIELD HEARING  
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Hood River, Oregon**

**Testimony of  
BG Robert Griffin, Commander  
Northwestern Division  
US Army Corps of Engineers**

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Mr. Chairman, Senators, and distinguished guests, I am BG Robert Griffin, Commander of the Northwestern Division, U.S. Army Corps of Engineers. I appreciate the opportunity to present the views of the Corps of Engineers and the Department of the Army concerning the Corps' study of alternative ways to configure and operate the four Lower Snake River dams for improved fish migration.

**Lower Snake River Juvenile Salmon Migration Feasibility Study**

**Background**

Many Columbia River stocks of salmon and steelhead are in decline. In 1991, National Marine Fisheries Service (NMFS) listed the Snake River sockeye salmon as endangered under the Endangered Species Act (ESA). In 1992, the Snake River spring/summer and fall chinook salmon were listed as threatened. Over the last several years, other Columbia and Snake River salmon and steelhead stocks have been listed under the ESA. Currently, there are 12 listed stocks within the Columbia River Basin.

No single factor is solely responsible for the decline of the salmon, and there is no single action that will restore them. Recovery efforts will address four separate areas, commonly referred to as the 4H's: harvest, habitat, hatcheries, and the hydropower system.

The Corps of Engineers primary role in recovery efforts is to undertake measures at its dams and reservoirs to assist the region in restoring salmon and steelhead populations. The Corps operates a series of eight dams on the lower Columbia and Snake Rivers that affect the habitat and migration of anadromous salmon and steelhead. These are Bonneville, The Dalles, John Day and McNary dams on the lower Columbia River and Ice Harbor, Lower Monumental, Little Goose and Lower Granite dams on the lower Snake River. It is a widely held view that the dams are a major human-caused factor in salmon mortality.

The salmon and steelhead listings triggered the requirement for Federal agencies to consult with NMFS on dam operations potentially affecting the listed species. This consultation culminated in a hydropower Biological Opinion (BiOp) for salmon issued by NMFS in March 1995 and a supplemental BiOp for steelhead issued in March 1998. The BiOps described specific Federal actions associated with the operation of the Federal Columbia and Snake River dams, to avoid jeopardizing the continued existence of the listed species.

The 1995 BiOp identified many near term actions to be taken to protect salmon, and a long-term plan to study new ways to operate and configure the dams. In response to the requirement to evaluate long-term alternatives for the four lower Snake River dams, the Corps initiated the “Lower Snake River Juvenile Salmon Migration Feasibility Study.”

### **Objective and Scope**

The primary objective of this study is to develop a plan to effectively and efficiently improve migration conditions for salmon and steelhead in the lower Snake River and contribute to the recovery of these stocks. This study will only address questions and make recommendations related to the four lower Snake River dams. It will not address specific actions on dams and reservoirs on the Columbia River, or other factors in salmon decline outside operation of these projects.

The geographical scope is the lower Snake River, which starts at its confluence with the Columbia River and extends upstream approximately 140 miles to the city of Lewiston, Idaho. Within this reach of the river there are four dams and reservoirs designed, constructed and operated by the Corps of Engineers: Ice Harbor, Lower Monumental, Little Goose, and Lower Granite. These are multiple use projects, authorized by Congress and operated for power production, inland navigation, recreation, and fish and wildlife.

The Corps is preparing an Environmental Impact Statement (EIS) for the Lower Snake River Juvenile Salmon Migration Feasibility Study in compliance with the National Environmental Policy Act (NEPA). This EIS will include a comprehensive description of the existing condition and the various alternative actions being investigated, and a qualitative and quantitative assessment of the effects of the alternative actions on all system uses and resources (cultural resources, water and air quality, power, navigation, water supply, recreation, commercial fishing, resident and anadromous fish, wildlife, real estate, etc.). In addition, the EIS will include documentation of compliance with all applicable Federal and state laws and treaties, a trade-off analysis or comparison of the proposed alternatives, and a complete description of the recommended preferred alternative (including the implementation plan for this recommended action).

There are two technical workgroups that are heavily involved in the development of information critical in this and other salmon studies and decisions. These are the Plan

for Analyzing and Testing Hypothesis (PATH) and Drawdown Regional Economic Workgroup (DREW). Both groups include representatives from Federal agencies, state agencies, tribes, consultants, and other regional interests. The PATH group of scientists was formed to provide modeling information to regional decision-makers on salmon and other fish and wildlife solutions, using historical scientific information in combination with new data. The DREW is a group of economists, social scientists, and other professionals who have been tasked to analyze and describe social and economic effects associated with alternative recovery measures. The word “drawdown” is used in the DREW title because the drawdown or dam breaching options have by far the most significant socio-economic effects, so most of their analysis is devoted to this option. These groups have engaged independent technical review groups for their efforts.

### **Alternatives Under Evaluation**

There are three primary alternative pathways that have been identified and are being evaluated in this feasibility study. The alternatives are being evaluated on an equal basis; none is being given preferential consideration. They include:

1) Existing Condition. In accordance with the 1995 and 1998 Biological Opinions, the Corps currently implements a number of measures to improve migration conditions for salmon and steelhead. These include augmented river flows, increased spill for juvenile fish bypass, operation of and improvements to adult and juvenile fish bypass systems, and the continued operation and improvement of the juvenile fish transportation program. Completed, ongoing and planned improvements include: improvements to existing juvenile and adult bypass systems; additional barges for juvenile fish transportation; and, flow deflectors on dam spillways to reduce dissolved gas associated with spill.

2) Natural River Drawdown (dam breaching). The Corps has investigated a number of different drawdown scenarios of various depths and duration. The drawdown option that has shown potential for measurable biological benefit over the existing system is what is called “natural river drawdown.” This is the controlled breaching of the dams. This option would return the river to a free-flowing (pre-dam) condition, removing all man-made hydraulic control of this portion of the river. Obviously, this option would have profound effects on other project uses. Commercial barging and power production would cease. Recreation use and resident fish habitat would be affected, and Native American burial sites and artifacts may be exposed.

3) Major System Improvements. Potential system improvements include new surface bypass systems for juvenile fish, turbine improvements for better fish passage survival, and spillway and stilling basin modifications to further dissipate dissolved gas. Surface bypass systems work with the natural tendency of the juvenile fish to migrate at or near the surface of the reservoir. The intent is to increase the number of fish guided away from the turbines (fish can either be guided over a spillway or to a holding facility), and minimize stress on fish. Turbine passage improvements may be possible through

such technological developments as the minimum gap runner currently being tested as part of the Bonneville Dam rehabilitation project.

## **Schedule**

The Lower Snake River Juvenile Salmon Migration Feasibility Study EIS is expected to be completed in early 2000. A draft EIS will be distributed for a 90-day public review in the fall of 1999. Completion of these documents is contingent on completion of the Anadromous Fish Appendix. The original April 1999 date for release of the draft EIS has been delayed in response to a request by NMFS for additional time to prepare the Anadromous Fish Appendix.

## **Preliminary Results**

Limited preliminary results are available at this time and are provided here for information purposes. These results have previously been shared with interested parties through the regional coordination process described below. The more detailed information being gathered and analyzed for the draft EIS will be contained in 22 appendices covering engineering, anadromous fish, socio-economics, cultural resources, water and air quality, the Clean Water Act, the US Fish and Wildlife Service Coordination Act Report, resident fish and wildlife, hydrology and other aspects of the study analysis. The Corps plans to make this information available with the release of the draft EIS which will provide a comprehensive analysis of all aspects of the study.

### **1. Economics.**

Preliminary findings of economic impacts for hydropower, navigation, and water supply have been developed. A brief summary is provided below.

Current estimates indicate that under the dam removal alternative, the cost of replacing the electrical power currently generated by the four projects would range from \$250 to \$300 million annually. Because commercial river transport would no longer be available, all movements would shift to rail or truck modes of transportation at an added cost of approximately \$50 million annually. Studies in progress that may affect this number include a rail capacity analysis, rate studies, and an assessment of roads and other upland infrastructure impacts.

In regard to the water supply analysis, we are estimating that approximately 35,000 acres of farm land would go out of production, since the value of the land and net farm income is insufficient to cover the cost of pump modifications. The direct impact to farmers is expected to be about \$10 million annually. Municipal and industrial water users would incur costs of \$1 to \$4 million annually to make modifications to facilities in the event the dams are removed. In addition, impacts to private wells are estimated at about \$4 million annually.

There are a number of other socio-economic areas where information is still being developed or under technical review. These areas include: recreation, commercial fishing, tribal circumstance, regional and social effects, economic mitigation or compensation, and others.

In addition, preliminary construction costs have been developed for each alternative. The preliminary construction cost to implement the dam removal option is approximately \$1 billion (subject to change), for breaching the earth embankment sections of the four dams.

The economic effects of major system improvements on power would be \$5-20 million per year. Other effects are still being developed.

**2. Anadromous Fish.** NMFS is preparing the analysis of effects on salmon and steelhead. This information will be incorporated into the Anadromous Fish Appendix, which will be attached to the EIS. This analysis will incorporate the information that is being developed by PATH. It will also evaluate the short term impacts associated with construction, evaluate new research data not available to PATH for their analysis, and develop independent conclusions on the effectiveness of the various alternative actions in meeting recovery standards. The NMFS report will be available in mid-April 1999.

**3. Other Environmental Effects.** Work is ongoing to determine effects on other resources. These other areas include: resident fish and aquatic organisms, terrestrial ecology, sediment, water and air quality, and cultural resources. This information developed for these areas will be incorporated into the EIS.

## **Regional Coordination**

The Lower Snake River study continues to engage interested state, tribal, Federal, industry and interest group representatives in various elements of the study through the DREW and through multiple regional meetings open to all parties.

Recognizing the critical decisions the Federal agencies face in the year ahead regarding recovery actions for salmon, steelhead, sturgeon, bulltrout, snails, and other species listed under ESA, the agencies have recently formed a caucus group to ensure coordination among the agencies and a unified approach. The Federal Caucus is made up of representatives from NMFS, U.S. Fish and Wildlife Service, Bureau of Reclamation, Bureau of Indian Affairs, Bureau of Land Management, Environmental Protection Agency, the Army Corps of Engineers, U.S. Forest Service, and Bonneville Power Administration. The Caucus will formulate alternatives for operating the Federal hydropower system within the context of interrelated actions for and effects on other listed species, and across the life-cycle influences: harvest, hatcheries, habitat, and hydropower. The Lower Snake River study will be included in this effort.

The Federal Caucus intends to work with the other regional interests in developing and analyzing alternatives, coordinating with, and building upon, products of

the regional Multi-species Framework Project headed by the Northwest Power Planning Council, and addressing policy and planning issues within the Columbia River Basin Forum which has recently come together with the signing of a Memorandum of Agreement by regional state, tribal and Federal representatives.

The Lower Snake River Juvenile Salmon Migration Feasibility Study has a comprehensive public outreach program that includes public notices, displays, newsletters, a web site, videos, workshops, focus groups, community group presentations, public information meetings, and reports (i.e. Interim Status Reports, Project Study Plans, etc.). There are also a number of public processes that are required under NEPA including the Notice of Intent, scoping meetings, formal public hearings, and public review of the draft and final EIS. Through this effort the Corps has been able to identify issues and concerns of the public, and incorporate them to the extent possible into the study.

### **Process Leading to Recommendation**

This fall, the Corps will publish and distribute for agency, and public comment, a draft EIS that describes the alternatives examined in the study and our analysis of economic, social, cultural, biological and engineering effects of the alternatives. Our intent at this time is to identify a preferred alternative in the draft EIS. We will then have a 90-day period for public comment, agency reviews, and tribal consultation concerning the preferred alternative and our analyses. A series of public hearings will be held around the region. Comments received during the review period or from the hearings will be addressed in the final EIS.

A final EIS is expected to be published in early 2000. If the recommendation in the final EIS includes dam breaching, Congressional authorization would be needed. Major system improvements would not require authorization.

The decision factors for the preferred alternative and final recommendation include whether the requirements of ESA are met, including whether the alternative will meet survival and recovery objectives for the affected species, other biological effects, economic effects, financial considerations and statutory or legal requirements such as tribal trust responsibilities. We expect that results of uncertainty analyses will be an important decision consideration.

### **Closing**

In closing, I would like to thank you again for the opportunity to testify. I and several members of my staff involved in the Lower Snake River Juvenile Salmon Migration Feasibility Study stand ready to answer your questions.